

Memorandum

Supplement # 3 to FER-45

To : Earl W. Hart

Date: October 26, 1978

Telephone: ATSS ()
()From : **Department of Conservation**
Division of Mines and Geology—San Francisco 94111

Subject: The comments of Gary Rasmussen, dated October 11, 1978, regarding our proposed new Special Studies Zones in the Yucaipa area. Our FER-45 deals with this area.

Rasmussen argues that "substantial changes" should be made in our proposed SSZ along the Chicken Hill fault. He cites three areas of disagreement to support his contentions. He also suggests that we have one fault trace too many in our SSZ along the Western Heights fault. I will deal with the four issues, one at a time.

1. Rasmussen cites our "failure to extend the fault on the proposed zone where we encountered it along Tenth Street." This is fault "A" on figure 2. It is characterized at the surface by a prominent, youthful-appearing, northwest-facing scarp, as indicated on figure 1. Rasmussen observed the fault in his trenches no. 1, 2, and 3 (figure 1). I placed this fault on our preliminary SSZ map, but did not extend it to the northeast of his trench no. 3. The "straight" northeastward projection of this fault trace would take it through trench no. 4, but no fault was encountered there. It appears that Rasmussen has shifted his mapped trace of the fault just far enough to the southeast to avoid the trench. Rasmussen also cites "interpretation of aerial photographs" and "the presence of a strong magnetic anomaly" as evidence for the northeastward continuation of the fault. We have in our possession some good quality aerial photo coverage of that area, dated 1952, and I see no indication on those photos of a northeastward continuation of the trace. I saw no evidence for it on the ground. I do not agree with Rasmussen's interpretation of his magnetic survey data. I gained a great amount of experience in obtaining and interpreting magnetic profiles across known faults during the two years I worked on the San Andreas project; the profiles that Rasmussen obtained in this area are of such a nature as to be of almost no value in determining the existence or location of a fault. I cannot show that the fault trace does not continue to the northeast, but Rasmussen does not show that it is there. Therefore, I did not show this part of the trace;

I am following our policy of not drawing a fault trace on the SSZ maps unless there is a reasonable amount of evidence for both its existence and location.

2. Rasmussen questions the existence of the fault trace labeled "B" in figure 2. The position of this trace is based on a 1 to 2 meter high northwest-facing scarp (figure 1). This scarp may be erosional in origin. Rasmussen argues that his trench no. 4 crossed this feature and no faulting was observed. However, his trench log shows a monocline at the point where it crosses the scarp, and it also indicates some fracturing near the upper (southeastern) side of the monocline. I rate the evidence for the existence of this fault as being inconclusive, but if the fault is there, then the scarp is a clear indicator of its location. It was (and still is) my decision that the weight of evidence is just barely strong enough to warrant the inclusion of this fault trace on the SSZ map.

3. Rasmussen disagrees with "the placement of a few short northwest trending faults which do not appear to be actual faults in the field." These features are labeled "C" on figure 2. They are characterized by 1 to 3 meter high southwest-facing scarps (figure 1). Rasmussen says that these features "... appear to be currently related to erosion and drainage and may originally have been graded by man as they do not appear natural." They do not, to me, appear to be related to erosion and drainage, and, in fact, I am certain that these features were not formed by erosional processes. I am not certain that these features are not man made. The aerial photography indicates that they are at least 40 years old. In considering that these features may be man made, I am unable to recognize any purpose for their construction. They do not have the characteristics of agricultural terracing. The area does not look as though it was used as a borrow pit. In studying the area within a radius of several miles of this site, I observe the same land use: primarily orchards, with some annual cultivation. I do not see any other landforms similar to these except for the fault scarps that have been recognized and confirmed as such. If these are man-made scarps, then it is a very unusual coincidence that they only occur immediately adjacent to a fault-generated scarp that is very similar in height and youthfulness of appearance. Rasmussen's trench no. 1 extended over to one of these scarps (figure 1), but did not extend sufficiently far down through the base of the scarp to confirm or deny the existence of a fault. In balance, I found the weight of evidence sufficient to warrant the depiction of these scarps as fault traces on the SSZ map.

4. Rasmussen does not believe that the more northwesterly of the two fault traces at the extreme southwesternmost one mile of the Western Heights fault zone is a fault (labeled "D" on figure 2). He says, "It

was our opinion that the slight break in slope on our project site and the site along Sand Canyon Road were caused by normal deposition and erosion resulting in different terrace levels as opposed to having been created by offset from faulting". There are at least two places along that "slight break in slope" where the fault is sufficiently well exposed in gullies to allow the measurement of the fault attitude. These attitudes are shown on figure 4 of FER-45, and reproduced as figure 3 of this memo. The feature is clearly fault-generated, and I have therefore shown it as a fault trace on the SSZ map.

I do not recommend any changes in the Yucaipa quadrangle SSZ map, as issued by the DMG on July 1, 1978.



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